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ABSTRACT

The testing manual for middle and secondary schools of the School City of Gary is provided. The manual is divided into five parts: (1) rationale of the citywide testing program--selection and classification decisions, evaluation of treatments and verification of hypotheses, selection of tests, and general testing principles; (2) preparation for testing--Student Test Analysis, test bulletin, test analysis class list, test administration check list, preparing the subject for the test, scoring services available, the student test profiles; (3) interpretation of test results--derived scores, supplementary glossary, using stanines to relate achievement to capacity, test interpretation cautions; (4) the current testing program--the Lorge-Thorndike Intelligence Tests, Form 1, the Iowa Tests of Basic Skills, Form 5, the Tests of Academic Skills, Levels I and II, the Differential Aptitude Tests, Form L, annual twelfth grade survey, the special reading testing program, Indiana Needs Assessment Program; and (5) content analyses of the ITBS--reading comprehension, vocabulary, mathematics. References and related data--practice exercises, announcements for students, incomplete data form, test inventory form, a list of factors affecting the success of a measurement and evaluation program, and a grid for plotting pairs of stanines on a scattergram for a single class--are also provided. (KM)

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REVISED EDITION OF TESTING MANUAL

FOR MIDDLE AND HIGH SCHOOLS

RESEARCH DEPARTMENT: DIVISION OF INSTRUCTION
SCHOOL CITY OF GARY
GARY, INDIANA

JULIUS A. STRATTON, SUPERVISOR
RESEARCH AND TESTING

SEPTEMBER, 1973

REVISED EDITION OF TESTING MANUAL

FOR MIDDLE AND HIGH SCHOOLS

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September 5, 1973

P R E F A C E

The School City of Gary has been involved with many innovative learning activities. The assessments of activities at the middle and high school program of studies have given us reasons to believe that we are on the verge of establishing curriculums that will help us to maintain the basic skills that have been developed by those who will soon reach the upper grades.

We believe that our children are learning to understand, appreciate and take care of the natural world in which we live. There are evidences that they are learning to understand how to live with their fellow inhabitants of our planet. We are committed to career development at all grade levels. Our teachers are learning effective new techniques for implementing the instructional programs.

It is now time to further assess the feasibility of our educational experiments at the secondary school levels and to evaluate some of the projects summatively. Achievement and aptitude testing will be one of several techniques used to look at our educational enterprise. The validity of this phase of our instructional program will depend to a large extent on a common frame of reference for our testing policies and procedures. It is hoped that this manual will distinguish itself as one of your important guidelines for support of our instructional activities.

Our new testing instruments, new testing program, and new computer input and output further emphasizes the need for this manuscript. This second edition has followed your dictates after this year's "birth pains."

Julius Stratton

September 5, 1973

ACKNOWLEDGMENTS

The following persons have worked as a team to make the Student Test Analysis operation a meaningful experience for all who are involved with the instructional programs for the students in the School City of Gary.

1. The Data Processing Department is the "right hand" of the Research Department. The key staff members of EDP are responsible for the computer operations and utilization of the Research Department's data entry for educational measurement, evaluation and statistical analyses.

2. The administrators, teachers and counselors have been most cooperative during this pilot phases of the program.

3. Many persons associated with other agencies have made major contributions to the School City of Gary's efforts to introduce this new program. We are grateful for their expertise.

College Entrance Examination Board
Educational Testing Service
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4. The administrative cooperation and the support of the Superintendent of Schools and the District Administrators was indicative of the priority given to this program.

The concerted efforts of these, and many other persons, have allowed the School City of Gary to add another innovative instructional activity that will enhance our efforts in providing quality education for our children.

TABLE OF CONTENTS

	Page
Preface	ii
Acknowledgements	iii
PART ONE - RATIONALE OF THE CITYWIDE TESTING PROGRAM	1
Selection and Classification Decisions	1
Evaluation of Treatments and Verification of Scientific Hypotheses	3
Selection of Tests for Programs	3
General Testing Principles	5
PART TWO - PREPARATION FOR TESTING	7
The Student Test Analysis (STA)	7
The Test Bulletin	7
The Test Analysis Class List	8
The Test Administration Check List	10
Preparing the Subject for the Test	11
Scoring Services Available	11
The Student Test Profiles	14
PART THREE - INTERPRETATION OF TEST RESULTS	19
Derived Scores	19
Supplementary Glossary	20
Using Stanines to Relate Achievement to Capacity	23
Test Interpretation Cautions	24
PART FOUR - THE CURRENT TESTING PROGRAM	25
The Lorge-Thorndike Intelligence Tests, Form 1	26
The Iowa Tests of Basic Skills, Form 5	27
The Tests of Academic Skills, Levels I and II	28
The Differential Aptitude Tests, Form L	29
Annual Twelfth Grade Survey	31
The Special Reading Testing Program	32
Indiana Needs Assessment Program	32
PART FIVE - CONTENT ANALYSES OF THE ITBS	33
Reading Comprehension	33
Vocabulary	33
Mathematics	37
APPENDIXES OF RELATED DATA	43
REFERENCES UTILIZED	59

PART ONE - RATIONALE OF THE CITY-WIDE TESTING PROGRAM

Test information can be useful for four major types of problems of our educational enterprise:

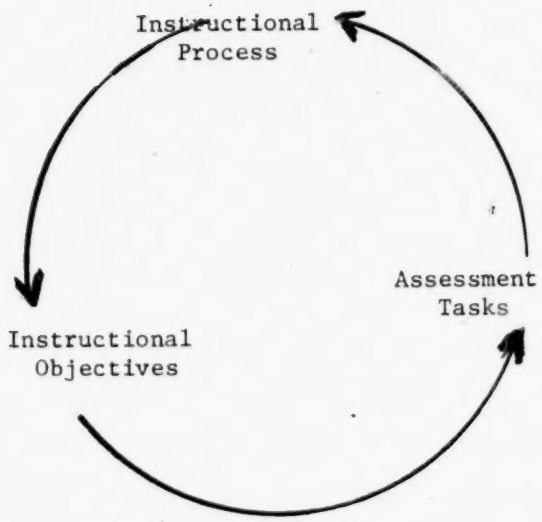
1. Selection Decisions
2. Classification Decisions
3. Evaluation of Treatments
4. Verification of Scientific Hypotheses

Selection and Classification Decisions

It has been agreed that the testing program should be more clearly related to instruction so that the results may be used more extensively to improve instruction as well as serving the counseling program.

1. Clear statements of instructional objectives for mathematics, vocabulary, and reading comprehension skills have been listed for the middle schools.
2. These objectives become a performance standard, for which various instructional strategies are developed.
3. The criterion of success becomes the degree to which the student's performance corresponds to these previously set performance standards.
4. These frame of references are not viewed as mandatory guidelines for any class. Special evaluation techniques can be provided for innovative instructional activities. A city-wide assessment of our instructional efforts, however, will require the use of standardized instruments.

The Figure on the next page, is a succinct description of the rationale for this phase of our new testing program.



5. Test results will be reported in terms of specific instructional objectives. Skill deficits will be identified. Specific learning experiences can then be planned to correct deficiencies. Special aptitudes of each pupil will also be identified.
6. The information from the 1973-74 program of measurement, evaluation, and statistical analyses can help the teacher to individualize instruction when (1) selecting curriculum materials, (2) organizing small work or instructional groups, (3) setting the pace of instruction, (4) selecting methods of instruction, (5) differentiating goals and expected levels of achievement, and (6) identifying special aptitudes of each child.
7. Grade equivalents, percentiles, and stanine scores will continue to be listed for each child. Profiles, tables and summary of city-wide test and project reports will be prepared.

Evaluation of Treatments and Verification of Scientific Hypotese

It was in 1967 that the well-known distinction between FORMATIVE and SUMMATIVE evaluations highlighted the possibility that different criteria might be appropriate to differing evaluative contexts.

1. FORMATIVE EVALUATION: Providing, upon request, the conceptual and technical services involved in defining and measuring behavioral objectives. The evaluator also designs and evaluates selected instruments used for the process and output evaluations.
2. SUMMATIVE EVALUATION:
   (a) Input Evaluation-Providing supportive data to help the project's staff determine the relevance of the program to the needs of the students, staff, and parents of the School City of Gary.
   (b) Process Evaluation-Providing a monitoring service so that project directors may make required improvements while the program is in operation.
   (c) Output Evaluation-Providing evidences of change or lack of change in the attitude and/or behavior of students, staff, and parents.

Selection of Tests for Programs

The number of published tests of all kinds is very large; and care must be taken in choosing among them. A file of specimen tests and test catalogues are available for perusal according to the Departments policies and procedures for this service. A rule of thumb guideline for selection of test for use

follows:

1. Formulate clearly the purposes that are to be achieved by use of the tests. It is important to know precisely the kinds of information that the tests are expected to supply.
2. Learn what tests are available in the general area in which testing is to be done. This can be done by reference to sources such as the Mental Measurements Yearbook and the critical reviews appearing in relevant journals.
3. Write to test publishers for catalogs and materials descriptive of tests you wish to consider.
4. Obtain copies of those tests which, from their descriptions, appear to meet the purposes for which they are being selected.
5. Examine the test, keeping in mind always their appropriateness for particular needs as well as considerations of reliability, ease of administration and scoring, kinds of normative data provided, and evidence of careful development and research.
6. Use this report's listed references by Lee Cronbach for further guidelines in evaluating a test.

It is sometimes hard to tell which of two or more tests is better simply by an examination of the test materials. It is possible, however, to get some idea from the information given in the test manual--or from the lack of information--whether or not, for example, adequate research and prepublication tryout have gone into the production of a test and whether it would appear to function adequately when put to practical use.

It would be highly desirable, or course, for the potential test user to consider the kind of developmental work that goes into the production of a

good standardized test--the lengthy analysis of courses of study, of textbooks, of professional pronouncements; the painstaking writing, re-writing, and editing.

General Testing Principles

We have agreed on the following characteristics of a sound middle and high school testing program:

1. The program should be continous. Occasional testing may serve immediate needs, but fully effective use of tests is possible only when they are part of a continuing program that permits measurements of growth and progress, and evaluation of changes from year to year.

2. The testing program should be comprehensive. Spot testing in one subject or another, or periodic use of a mental ability test, is of value; but results of all tests are enhanced when they are part of a comprehensive evaluation program and when they may be studied in relation to other test data.

3. Testing should be jointly planned. Because test data are of concern to teachers, guidance counselors, curriculum specialists, and principals, decisions relative to selection of tests, scheduling of tests, reporting of results, and other aspects of the program should be made jointly by all of them. Only in this way can there come about common understanding to the purposes of testing and realization on the part of all of the benefits to be derived from it.

4. The testing program should be integrated into the total educational program. Standardized testing should not be thought of as extrinsic to or independent of the school's total program but as an essential part of it, intimately related to instructional goals and to guidance and counseling activities.

Interpretations of the data compiled for this report should take into consideration the following factors: (1) The amount of local emphasis given to items emphasized in the test. (2) The placement of the test emphasized skill in our local curriculum, and (3) The distribution of academic aptitude of the pupils involved.

Instructional follow-up should not be centered upon teaching pupils to answer a particular test item or group of items, but rather upon the development of the skills which the items measure. It is very easy to teach pupils to answer a particular item correctly, but nothing of lasting educational benefit will result, if the use of the test is to result in genuine improvement. The skill must be developed through the use of completely independent instructional materials.

The skills classifications for reading comprehension, mathematics problem solving, and mathematics concepts are listed in the Appendix of this manual. Suggestions for developing the skills are also listed.

PART TWO - PREPARATION FOR TESTING

The Student Test Analysis (STA)

The following data will be provided for all computer processed testing programs in the format found on page .

The computer will list the test results according to:

1. Instruction area or school
2. Class and/or section
3. Grade or level
4. Test giver
5. Test date
6. Student number
7. Converted scores (Stanines, grade equivalents and/or percentiles).

Each teacher involved can receive a class analysis. Each student will receive a student profile. A memorandum will be returned with the test results which will give a legend of sub-test numbers for the test given and an interpretive guide for the individual student profiles. The exhibit on page 13 , has been prepared in an attempt to further explain the new computer operations for STA.

The Test Bulletin

The Test Bulletin will be forwarded to the principal, testing chairman, and other persons involved with the testing program as scheduled. Each copy will list the name of the test given, the nature of the test, date of the test, and timing of the test. The following materials will be provided by the school's testing chairman:

1. Sufficient tests to accommodate your largest class. If you have more than one class, you are to use the same booklets for all classes.
2. Sufficient answer sheets to accommodate each of your students.
3. A Test Administration Check List for each class.
4. A Test Analysis Class List.

The testing chairman for each building will also provide:

1. Instructions for handling answer sheets before tests are administered.
2. A Manual for Administration.
3. A "Do Not Disturb Sign."

The Test Analysis Class List

Edit the TEST ANALYSIS CLASS LIST BY:

a. Drawing a line through the names of children who are not enrolled in your class.

b. Adding the names of students who are not listed. Please also list the student's ID number and birthdates.

(See Worksheet on Page 9 .)

Preparation and Materials

1. Use regular No. 2 black lead pencils with erasers.
2. Provide sufficient scratch paper to accommodate each pupil if required.
3. Obtain a stop watch or watch with a second hand.
4. Provide yourself with an extra copy of the test booklet for demonstration purposes.

SCHOOL 30 TEST ANALYSIS CLASS LIST DATE 12-06-71

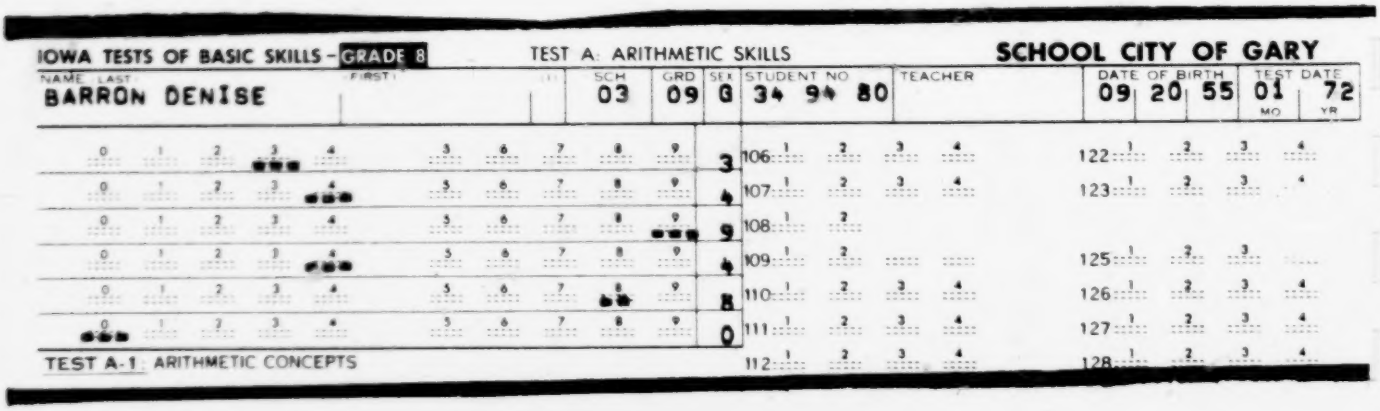
TEACHER/CLASS NUMBER 067 TEACHER NAME LABROI SECTION 067

STUDENTS

	NUMBER	NAME		GRADE	SEX	BIRTH DATE
	512700	AHLDERS	MELANIES	06	G	01-12-60
	513760	BAGGETT	RACHEL K	06	G	03-08-60
	514005	BALLARD	JAMES	06	B	01-17-60
	514790	BENFORD	LORI M	06	G	08-19-60
	516786	BUTTS	CARLA	06	G	05-15-60
	516740	CALLAWAY	COLLEENM	06	G	05-20-60
	517675	CHERRIER	LISA M	06	G	04-27-60
	519970	DAY	JEFFREYL	06	B	10-29-59
	~~520683~~	~~DORITY~~	~~RANDALLL~~	~~05~~	~~B~~	~~08-13-60~~
	520810	DREYFUS	JOSHUA B	06	B	02-03-60
	535759	MORRIS	STEPHENM	06	B	01-05-60
1-18-72	~~536100~~	~~MURPHY~~	~~GREGORYA~~	~~06~~	~~B~~	~~06-20-60~~
	536630	NOEL	GERALD	06	B	09-29-59
	536790	OCONNOR	BRENDANE	06	B	05-27-60
	537240	PAJOR	RICHARDA	06	B	12-08-59
	540690	ROMAN JR	FRANK V	06	B	08-07-60
	540910	ROTTENBERG	SCOTT M	06	B	06-25-60
	541430	SANDINE	JULIE A	06	G	10-05-60
1-9-71	~~541580~~	~~SAYLOR~~	~~SUSAN G~~	~~06~~	~~G~~	~~08-03-60~~
	542260	SHNEIDER	BENJAMIL	06	B	10-15-60
	543290	SPACEK	LYNNE M	06	G	02-24-60
	543330	SPEARS	DARRELLB	06	B	11-11-59
	545290	TOBACK	LARRY S	06	B	03-08-60
	546370	TOMALA	ROBERT W	06	B	04-30-60
Fr. 65	514005	BALLARD,	JAMES	06	B	01-17-60
	534345	McMASTER,	COLLEEN	06	B	07-15-60

The exhibit below is an example of the pre-printed answer sheets that will be prepared for each child. Name, School Number, Grade, Sex, Teacher, Date of Birth, Test Date, and Student Number.

IN AN ATTEMPT TO INSURE THAT THE SCORING PROCEDURE IS NOT DELAYED, PLEASE HAVE EACH CHILD SHADE AGAIN THE APPROPRIATE SPACES IN THE BOX FOR STUDENT IDENTIFICATION. USE NO. 2, REGULAR LEAD PENCILS. DO NOT ALLOW THE STUDENT TO USE INK OR BALL POINT PENS.



The Test Administration Check List

1. It is most important that the Test Administration Check List, found on page 17 is completed.
2. Place the completed check list (both sides should be properly filled in) with your package of completed answer sheets.
3. All answer sheets, test booklets, manuals and "Do Not Disturb" signs should be returned to the testing chairman of your school.
4. The Administration Check list and Test Analysis Class List should be placed with your answer sheets. Any <u>completely</u> <u>unwritten</u> answer sheets should be placed in a separate category.

5. The Testing Chairman will collect your answer sheets and return them by school mail in the same envelopes in which they were sent. In cases of emergency operations, the test will be picked up and returned by the Supervisor of Testing.

AGAIN, IT IS MOST IMPORTANT THAT WE REMEMBER THAT EVERY EFFORT WILL BE MADE TO PROVIDE PROMPT AND ACCURATE SERVICE. THE QUALITY OF OUR SERVICE DEPENDS IN PART UPON THE CONDITION OF THE ANSWER SHEETS WHEN THEY ARRIVE AT THE SCORING CENTER. IF THEY HAVE BEEN MARKED AND IDENTIFIED, THEY CAN BE MORE RAPIDLY AND ACCURATELY PROCESSED.

Preparing the Subject for the Test

Specialist in the field of psychometry are of the opinion that most middle-class American school-children are fairly test-wise and generally motivated to succeed in academic work and testing activities. There is a large body of knowledge to suggest that test-taking motivation varies widely in different groups. Other studies have found an interaction between testing conditions and such individual characteristics as anxiety level and achievement motivation.

Testing is an art. This primer will, therefore, not attempt to further emphasize the real social-psychological complexities of testing. The data listed in Appendix B, page 51, is available for those who wish to make the testee an "interested partner" in the testing procedure.

Scoring Services Available

Arrangements for scoring services should be made well in advance of the required needs. Requests for such services, other than the announced citywide testing programs should be a listed statement carrying the approval of both the school and district administrator.

CLASS ANALYSIS

10-18-73

INSTRUCTION AREA - *Pulaski Middle School* LEVEL - *14* Form - *5*

TEST GIVER - *J. Doe* TEACHER *063* SECT *08* TEST DATE *09-14-73*

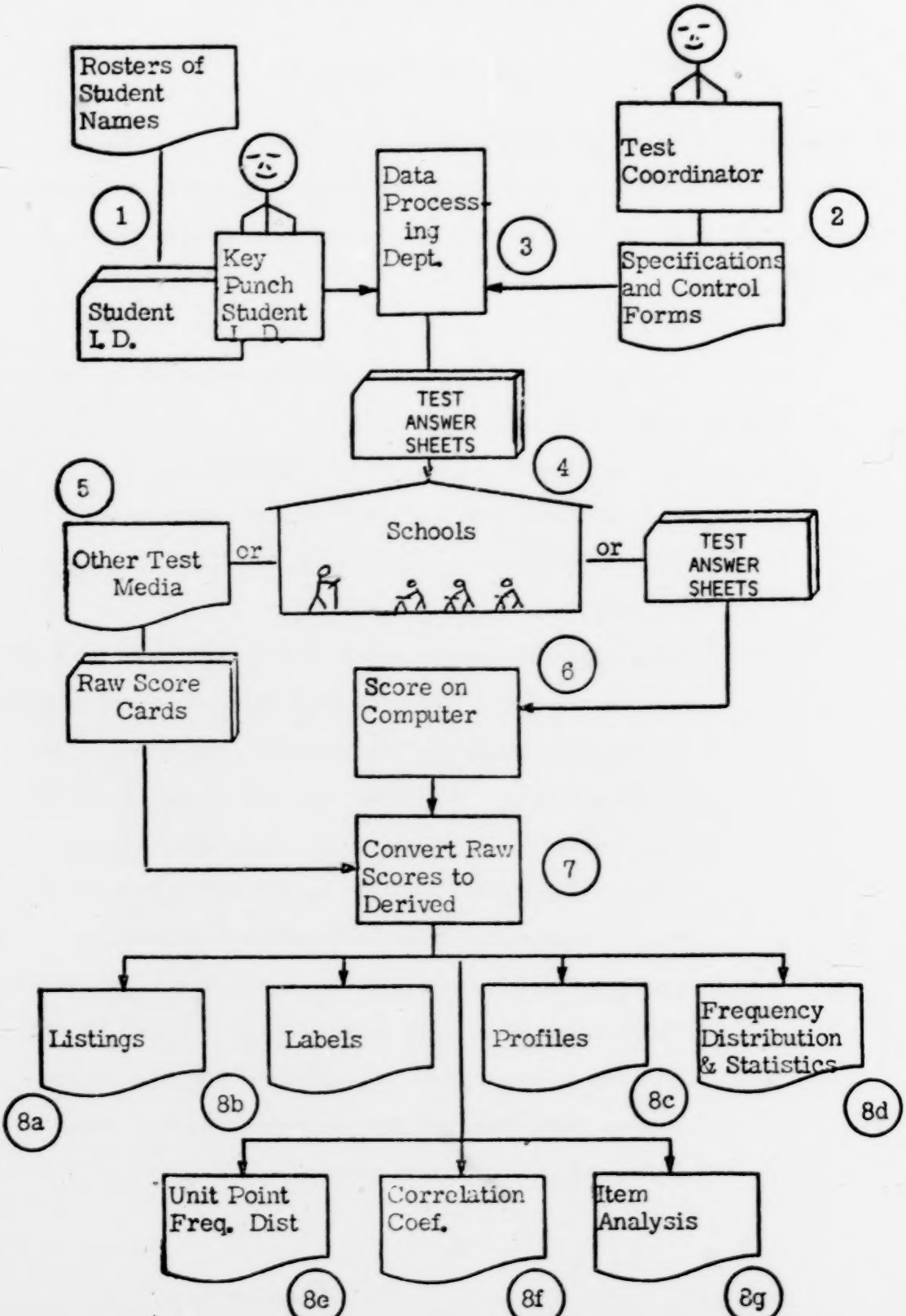
STUDENT NUMBER	STUDENT NAME		SUB-TEST NUMBER 02	03	05	06
416374	*Rivera Juan*	Percentile	41	30	44	7
		Stanine	5	4	5	2
		Grade Eq.	7.7	6.9	7.8	5.0
428502	*Jones Johnny*	Percentile	28	42	NS	NS
		Stanine	4	5	NS	NS
		Grade Eq.	6.9	7.6	NS	NS
478896	*Roszkowski Mary*	Percentile	43	42	27	3
		Stanine	5	5	4	1
		Grade Eq.	7.8	7.6	6.9	4.4
421750	*Ehrlichman John*	Percentile	47	11	1	2
		Stanine	5	3	1	1
		Grade Eq.	8.0	5.5	4.5	4.2
423786	*Smith Patricia*	Percentile	6	7	3	2
		Stanine	2	2	1	1
		Grade Eq.	4.7	5.1	5.1	4.2

Test Score Legends

Sub-Test Code	Sub-Test Title
02	Vocabulary
03	Reading Comprehension
05	Mathematic Concepts
06	Mathematic Problem Solving
NS	No Score

EXHIBIT I

A SIMPLIFIED FLOW OF TEST SCORING PROCEDURES



Student Test Profiles

A sample of the Student Test Profile is found on page 15 . The Student Test Profile will provide an opportunity for feedback to pupils and parents on standardized test results. Counselors and teachers can help interpret the scores.

A. The following description of the black and white Student Test Profile is provided to help you interpret the scores within the limits of their accuracy:

1. The top line of the form is self-explanatory. Each box is interpreted with a printed label of information.
2. The names of each test are listed with a graph to indicate the child's level of achievement.

   Percentiles-Percentiles are listed at the top of the profile. A percentile shows what rank each child holds when compared to a national standard. For example, when the right end of the string of stars falls under the column marked "37," that means that 37 percent of all children at his grade level have less skill in this subject and 63 percent of all children at his grade level have more skill.

   Stanines-Stanines are listed at the bottom of the profile. Stanines are equal units like inches on a ruler, running from one to nine. One, two, and three are below average scores; four, five, and six are average scores; seven, eight, and nine are above average scores.

SCHOOL CITY OF GARY

STUDENT NAME	GRADE	STUDENT NUMBER	SCHOOL	TESTING PROGRAM	DATE TESTED

TEST	TEST RESULTS	PERCENTILES 01 02 03 04 05 10 12 15 21 25 29 33 37 42 47 52 57 62 66 70 74 78 81 84 87 89 91 93 95 97 99

STANINES: 1 2 3 4 5 6 7 8 9

BELOW AVERAGE | AVERAGE | ABOVE AVERAGE

INDIVIDUAL TEST PROFILE
MIDDLE AND HIGH SCHOOL

SCHOOL CITY OF GARY

STUDENT NAME	GRADE	STUDENT NUMBER	SCHOOL	TESTING PROGRAM	DATE TESTED
DOE JOHNNY L	08	234567	45	IOWA TESTS BASIC SK.	1/73

TEST	TEST RESULTS	PERCENTILES 01 02 03 04 05 10 12 15 21 25 29 33 37 42 47 52 57 62 66 70 74 78 81 84 87 89 91 93 95 97 99
VOCABULARY SKILLS	07	******
READ. COMPREHENSION	12	**********
MATH. CONCEPTS	09	*******
MATH. PROB. SOLVING	18	**********

STANINES: 1 2 3 4 5 6 7 8 9

BELOW AVERAGE | AVERAGE | ABOVE AVERAGE

INDIVIDUAL TEST PROFILE
MIDDLE AND HIGH SCHOOL

The relationship between stanines and percentile rank for achievement tests is shown below.

Stanine	1	2	3	4	5	6	7	8	9
Percentile Rank	0-3	4-10	11-22	23-39	40-59	60-76	77-88	89-95	96+

The percentile points which appear in the norms tables for aptitude tests should be read as representing zones of ability rather than as precise points.

RESEARCH DEPARTMENT: DIVISION OF INSTRUCTION
School City of Gary, Indiana

TEST ADMINISTRATION CHECK LIST--CITY WIDE TESTING PROGRAM
(Middle & High Schools)

THIS FORM SHOULD BE FILLED IN IMMEDIATELY AFTER THE TESTS HAVE BEEN ADMINISTERED, AND SHOULD BE RETURNED WITH THE TESTS

School_____Teacher_____

Test_____Grade_____Date_____

Every effort will be made to provide prompt and accurate service. The quality of our service depends in part upon the condition of the answer sheets when they arrive at the scoring center. If they have been properly marked and indentified, they can be more rapidly and accurately processed. This check-list has been prepared to assist the test administrator in preparing the answer sheets for the best possible service.

PLEASE ENTER A CHECK MARK ON EACH LINE TO INDICATE OPERATION COMPLETED

1. IDENTIFICATION FOR ANSWER SHEETS THAT ARE NOT PRE-PRINTED

_____Pupil's name printed legibly and in the same manner on each answer sheet
_____School name or number
_____Grade
_____Sex
_____Student Number
_____Name of teacher or examiner
_____Correct birthdate (month, day, and year) on each answer sheet
_____Date of test (month and year)

2 MARKING

_____Responses are made with regular No. 2 lead pencils only.
_____Responses are HEAVY and BLACK.
_____Stray marks, crosses, dots, smudges, and partial erasures have been completely removed.
_____Multiple responses have been erased where item calls for a single response.

3. ARRANGEMENT

_____Place all answer sheets that are not pre-printed in the separate envelope which is provided.
_____Inspect answer sheets to be sure that they are not creased, folded, or clipped together.
_____Provide testing chairman with the TEST ANALYSIS CLASS LIST with listed transfers, withdrawals, and new enrollees for your class.

LIST NAMES OF ABSENTEES AND TESTS MISSED

Student Names	Tests Missed

(Please use additional pages if required)

Describe briefly any interruptions or irregularities which occurred and which you feel might have an adverse affect upon the test scores. If no irregularities occured, state "none".

Class Irregularity. _____

Pupil Irregularity: _____

PART THREE - INTERPRETATION OF TEST RESULTS

Derived Scores

PERCENTILE RANK

Percentiles are ranked scores from 1 to 100. If one of the percentile scores is 20, the achievement on the test is higher than that of 20 percent of those students in the national standardization sample. This percentile also indicates a score lower than 80 percent of the students in the national standardization sample. Percentile ranks are commonly used in high school.

STANINES

Stanines divide scores into nine groups. Stanines 4, 5, and 6 are considered "average;" 1-3, below average; 7-9 above average. Stanines should be used when comparisons are made between subject areas or pupils.

GRADE EQUIVALENTS

Grade equivalents relate scores to grade levels. If the grade equivalent score is 4.3, the achievement on that test is similar to that of pupils who have completed 3 months of the fourth grade. The grade equivalent score is most frequently used in the grades below high school.

Use the grade equivalent score with caution at the high school level. Although grade equivalents are easy to understand, they should be interpreted with caution. This is particularly true at the upper levels. Since grade equivalents are generally considered less reliable at the higher grade levels.

Among other things, they assume a regular pattern of growth throughout the school year, a condition which may seldom, if ever, be met. Furthermore, in the area of reading, rather wide deviations should be considered quite normal. Despite their limitations, however, grade equivalents have the advantage of simplicity and direct meaning and represent a convenient way of rendering scores on several tests "comparable."

SUPPLEMENTARY GLOSSARY

1. Measures of Central Tendency

Arithmetic mean: The sum of a set of scores divided by the number of scores. (commonly called average, mean). The mean is the only measure of central tendency that is based on the aggregate or total of the score values. This average, unlike the median or mode, will be sensitive to any change in performance level of any individual pupil.

Median: The middle score in a distribution; the 50th percentile; the point that divides the group into two equal parts. Half of the group of scores fall below the median and halt above it.

2. Measures of Variability

Standard Deviation (S.D.): A measure of the variability or dispersion of a set of scores. The more the scores cluster around the mean, the smaller the standard deviation.

Range: The difference between the lowest and highest scores obtained on a test by some group.

3. Basic Ability: The combination of native and acquired abilities that is needed for school work; likelihood of success in mastering academic work, as estimated from measures of the necessary abilities. (Also, called scholastic aptitude and academic aptitude).

4. Basic Skills: The authors of the ITBS TEST have emphasized that the tests cannot be considered as an achievement battery in the usual sense of measuring the knowledge in the common content areas of the elementary and middle school curriculum such as social studies, geography, science, and health.

The focus of these tests is on the evaluation of the generalized intellectual skills and abilities. The basic skills, as defined by the authors of the *Iowa Tests of Basic Skills*, are:

1. Vocabulary: knowing the meaning of words
2. Reading Comprehension: understanding what you read
3. Mathematics: understanding the number system, mathematical terms, operations, and problem solving

The basic skills, as defined by the authors of the *Test of Academic Skills* are:

1. Reading Comprehension
2. Vocabulary
3. English:
   a. Learning Skills
   b. Usage Conventions
   c. Spelling

d. Sentence Sensitivity
e. Paragraph Arrangement

4. Mathematics

5. Aptitude: A combination of abilities and other characteristics, whether native or acquired, known or believed to be indicative of an individual's ability to learn in some particular area. Thus, "musical aptitude" would refer broadly to that combination of physical and mental characteristics, motivational factors, and conceivably other characteristics, which is conducive to acquiring proficiency in the musical field. Some exclude motivational factors, including interests, from the concept of "aptitude, "but the more comprehensive use seems preferable. The layman may think of "aptitude" as referring only to some inborn capacity. The term is no longer so restricted in its psychological or measurement usage.

6. Intelligence Quotient: The following table shows the classification of IQ's offered by Terman and Merrill for The Stanford-Binet Test indicating the percent of persons in a normal population who fall in each classification. This table is roughly applicable to tests yielding IQ's having standard deviations of about 16 points (not all do). It is important to bear in mind that any such table is arbitrary, for there are no inflexible lines of demarcation between "feeble-minded" and "borderline," etc.

CLASSIFICATION		PER CENT OF ALL PERSONS
Near genius or genius	140 and above	1
Very superior	130-139	2.5
Superior	120-129	8
Above average	110-119	16
Normal or average	90-109	45
Below average	80-89	16
Dull or borderline	70-79	8
Feeble-minded: moron	60-69	2.5
imbecile, idiot	59 and below	1

A CRUDE I.Q. CONVERSION TABLE

Presented below is a table which we will use to interpret stanines in terms of I.Q., point intervals and percentile bands.

Stanines	I.Q. Point Intervals	General Interpretation	Approximate Percentile Bands
9	Above 126	Very Fast	96-100
8	120-126	Fast Learner	89-95
7	112-119		77-88
6	104-111		60-76
5	97-103	Average	40-59
4	89-96		23-39
3	81-88	Slow Learner	11-22
2	73-80		4-10
1	72 and below	Very Slow Learner	0-3

7. Raw Score: The first quantitative result obtained in scoring a test. Usually the number of right answers.

8. Standardized test (standard test): A systematic sample of performance obtained under prescribed conditions, scored according to definite rules, and capable of evaluation by reference to normative information. Some writers restrict the term to tests having the above properties, whose items have been experimentally evaluated, and/or for which evidence of validity and reliability are provided.

All of the foregoing comments on factors that affect test performance should make one cautious about using test scores for absolute predictions about the future of an individual. Recognition of errors of measurement should also make those of us who use test scores very cautious about interpreting small differences.

If reported findings are of value, it would seem reasonable to expect that academic success is coterminous with intelligence in combination with other significant human traits not subject to evaluation by tests of the type currently used as a measure of intelligence.

USING STANINES TO RELATE ACHIEVEMENT TO CAPACITY

Some teachers may wish to prepare "scattergrams" for their classes in which the mental test stanine scale appears on one axis and the achievement stanine scale appears along the other. Such a chart will have nine columns and nine rows and, of course, 81 cells. The data for a given pupil are tallied in the appropriate cell by entering a vertical mark in the cell. Such tallies may later be changed to numbers, or the teachers using the chart may enter the initials of the pupils as a ready means of identification. Pupils along the diagonal, or close to it, have achievement test stanines the same, or nearly the same, as their mental ability or capacity stanines, and may usually be judged to be achieving in a manner consistent with their ability. It should be noted, however, that on the average a pupil's achievement stanines are likely to be less extreme than his mental ability stanine. Pupils of stanine 8 in ability, for example, tend to have stanines of 6 or 7 on achievement measures; pupils of stanine 3 in ability tend to have achievement stanines of 4 or 5. This "regression" phenomenon, as the statisticians call it, needs to be kept in mind in deciding whether achievement in a particular case is or is not in line with capacity. Thus, only pupils whose tallies or initials appear in cells considerable above or below the diagonal should be thought of as "underachievers" or "above average."

Such charts are not recommended for use beyond the classroom or school. In the case of district-wide or city-wide data, comparison of median mental test stanines with median achievement stanines for each school, school district, or city school system should suffice. A sample of the scattergram is found in the Appendix of this manual.

TEST INTERPRETATION CAUTIONS

Test scores are estimates of student's performance. True performance may be a little higher or a little lower than the scores indicate. At least five factors should be considered when interpretations of test scores are made.

1. Standard Error (S.E.) A statistic providing an estimate of the possible magnitude of "error" present in some obtained measure, whether (1) an *individual* score or (2) some *group* measure.

   a. Standard Error of Measurement (S.E. Meas.): As applied to a single obtained score, the amount by which the score may differ from the hypothetical true score due to errors of measurement. The larger the S.E. Meas., the less reliable the score. It can be said that the chances are 2:1 that the actual score is within a band extending from *true score minus 1 S. E. Meas. to true score plus 1 S. E. Meas.*

   b. Standard Error: When applied to group averages, the S. E. also provides an estimate of the "error" which may be involved. 2:1 (2 out of 3) for the 1 S. E. range, 19:1 (95 out of 100) for a 2 S. E. range, 99:1 (99 out of 100) for a 2.6 S. E. range.

2. The Reliability Index is another technical factor that should be considered in test interpretations. This index represents the extent to which a test is consistent in measuring whatever it does measure: dependabiltiy, stability, relative freedom from errors of measurement. Reliability is usually estimated by some form of reliability coefficient or by the standard error of measurement.

3. No intelligence test will measure the innate ability of an individual. The I. Q. score obtained by an individual does not represent an unchanging, permanent trait of the individual.

4. All measurement contains errors. No measurement, whether it is a measure of individual's intelligence, his reading ability, his height, or his weight, is absolutely accurate. For this reason one should never think of a test score as a point on a scale but rather as a score falling within a range of scores.

5. We will not uncritically accept scores obtained from the Verbal Battery of the *Lorge-Thorndike Tests* for individuals who are poor readers or who do not speak English. For the poor reader, one could use the Nonverbal Battery to obtain an estimate of abstract reasoning ability that is not affected by ability to read. For individuals who speak Spanish, directions in Spanish are available for the Nonverbal Battery of the earlier Separate Level Edition of the *Lorge-Thorndike Tests*.

PART FOUR - THE CURRENT TESTING PROGRAM

PROPOSED SCHEDULE OF MEASUREMENT SERVICES FOR 1973-74

Middle Schools		High Schools	
Bailly	Kennedy-King	Emerson	Wallace
Beckman	Pulaski	Mann	West Side
Edison	Tolleston	Roosevelt	Wirt
Froebel	Advancement School	King Academy	
		Career Center	

G R A D E 8

Tests of Basic Skills — October 1-5, 1973

The Vocabulary, Reading Comprehension, and Arithmetic (Arithmetic Concepts and Arithmetic Problem Solving) subtests of the *Iowa Tests of Basic Skills* will be administered to eighth graders.

Tests of Basic Abilities

The Lorge-Thorndike Intelligence Tests (Verbal and Nonverbal Tests) will also be administered to eighth graders during this same period of time.

G R A D E 6

Tests of Basic Skills — October 8-12, 1973

The Vocabulary, Reading Comprehension and Arithmetic (Arithmetic Concepts and Arithmetic Problem Solving) subtests of the *Iowa Tests of Basic Skills* will be administered to sixth graders.

G R A D E 9

Tests of Basic Abilities — April 29-May 3, 1974

The Vocabulary, Reading Comprehension and Mathematics subtests of *The Stanford Test of Academic Skills* (TASK) will be administered to all ninth graders.

G R A D E 12

Test of Basic Abilities — May 6-May 10, 1974

The Vocabulary, Reading Comprehension and Mathematics subtests of *The Stanford Test of Academic Skills* (TASK) will be administered to all twelfth graders.

Annual Senior Survey — May 6-May 10, 1974

Baseline data for the twelfth grade data bank will be collected. Mr. Stratton will compile data required for School City, state, and federal reports.

and

SERVICES FOR SPECIAL PROGRAMS AS REQUIRED

THE LORGE-THORNDIKE TESTS

The Lorge-Thorndike Tests of Intelligence are a series of tests designed to measure abstract reasoning or learning aptitude. They consist of five Verbal subtests and three Nonverbal subtests which sample different kinds of mental processes as listed in the table below.

Intelligence or abstract reasoning is defined by the authors of this test as the "ability to work with ideas and relationships among ideas." Most abstract ideas with which children and adults deal are experienced in verbal symbols, so much so that verbal symbols are the appropriate medium for testing abstract reasoning. However, the very young, the poorly educated, or the poor reader may be inadequately appraised by the use of printed words for their individual abilities. The provision of a parallel set of nonverbal tests is used in an attempt to offset this disadvantage.

EIGHTH GRADE TESTS OF ABILITY

Subtest Legend		Admin. Time	Number of Items
02	Verbal IQ Tests	35 min.	
	1. Vocabulary	(7 min.)	25
	2. Sentence Completion	(7 min.)	20
	3. Mathematics Reasoning	(7 min.)	15
	4. Verbal Classification	(7 min.)	20
	5. Verbal Analogies	(7 min.)	20
03	Nonverbal IQ Tests	27 min.	
	1. Pictorial Classification	(9 min.)	25
	2. Number Series	(9 min.)	25
	3. Pictorial Analogies	(9 min.)	30

THE IOWA TESTS OF BASIC SKILLS, FORM 5

The Iowa Tests of Basic Skills are concerned only with generalized intellectual skills. The major reason for this is, according to authors of the test, that measures of the basic intellectual skills are far more valuable for use in the improvement and individualization of instruction than are measures of achievement in specific subjects.

The skills measured by the tests are classed into five major areas: vocabulary, reading, language, work-study, and mathematics. The present city-wide testing program, however, involves only the vocabulary, reading comprehension, and mathematics basic skills. Scores are reported in terms of stanine (Sta-9), grade-equivalents (GE) and/or Percentile Ranks (PR). Descriptitons of the tests utilized at the middle sixth and eighth grade levels are as follows:

SIXTH GRADE TESTS OF BASIC SKILLS

Subtest Legend	Sub-Tests Involved	Admin. Time	Number of Items
02	Test V: Vocabulary	17 min.	46
03	Test R: Reading Comprehension	55 min.	76
	Test M: Mathematics Skills	60 min.	76
05	M-1: Mathematics Concepts	(30 min.)	(45)
06	M-2: Mathematics Problem Sol.	(30 min.)	(31)

EIGHTH GRADE TESTS OF BASIC SKILLS

Subtest Legend	Sub-Tests Involved	Admin. Time	Number of Items
02	Test V: Vocabulary	17 min.	48
03	Test R: Reading Comprehension	55 min.	80
	Test M: Mathematics Skills	60 min.	82
05	M-1: Mathematics Concepts	(30 min.)	(48)
06	M-2: Mathematics Problem Sol.	(30 min.)	(34)

THE TESTS OF ACADEMIC SKILLS

Stanford Tests of Academic Skills (TASK '73) are our new measurement instruments used as one factor for assessing the school system's curricular elements.

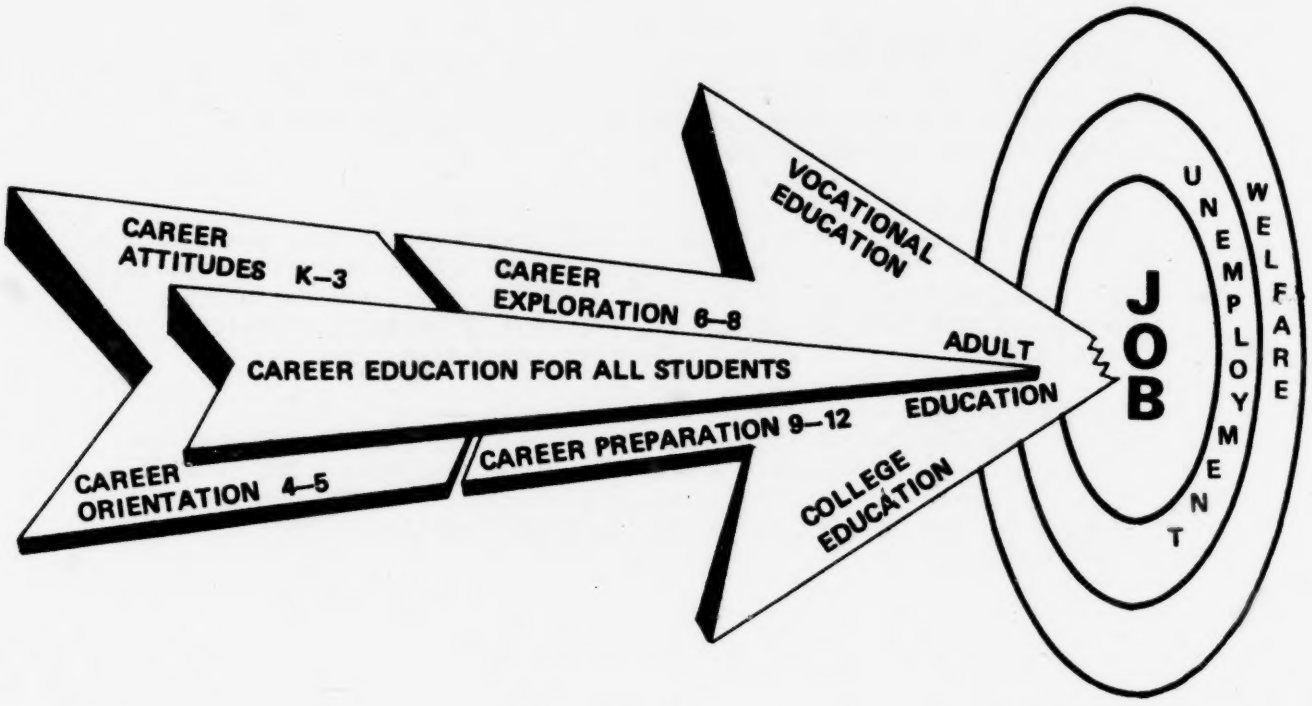
The Stanford Tests of Academic Skills (TASK '73), Levels I and II, will be used for ninth and twelfth grade students. The tests assess school performance from grade 9 through the first year of college. The following three subtests are involved in the assessment at the ninth and twelfth grade levels:

NINTH AND TWELFTH GRADE TESTS OF BASIC SKILLS

Subtest Legend		Admin. Time	Number of Items
03	Test 1R: Reading	40 min.	78
	Part A - Comprehension	(30 min.)	
	Part B - Vocabulary	(10 min.)	
02	Test 2E: English	40 min.	69
	Part A - Learning Skills		
	Part B - Usage Conventions		
	Part C - Spelling		
	Part D - Sentence Sensitivity		
	Part E - Paragraph Arrangement		
05	Test 3M: Mathematics	40 min.	48

Scores are reported in terms of the stanine (Sta-9), grade equivalent (G. E.), and/or percentile rank (PR).

THERE IS A RECOGNITION IN THIS PROGRAM FOR GREATER EMPHASIS ON CAREER EDUCATION



A Special Assessment of Student Aptitudes

1. Abstract Reasoning (AR)
   A non-verbal, non-numerical measure of reasoning power. Ability to see relationships among things--objects, patterns, diagrams, or designs--rather than among words and numbers. Useful in shop, drafting, and laboratory work--also in mathematics, in electrical or mechanical trouble-shooting, in computer programming, etc.

2. Clerical Speed and Accuracy (CSA)
   Quickness and accuracy in perceiving and marking simple letter and number combinations. Important in paper work in school, and in offices, laboratories, stores warehouses, or wherever records are made or filed or checked. Sometimes a low CSA for a generally able person may indicate great emphasis on correctness rather than genuine lack of ability to work rapidly.

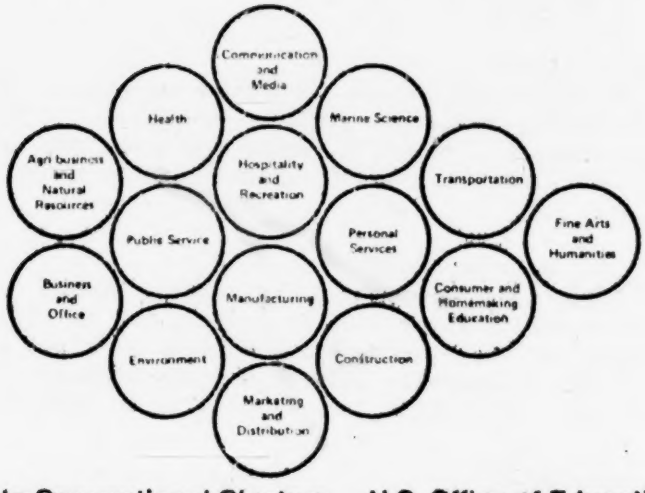
3. Mechanical Reasoning (MR)
   Comprehension of mechanical principles and devices, and of the laws of everyday physics. Courses in the physical sciences, technical studies, or manual training shop are easier for those who score high in MR, as are mechanical repair work and a wide variety of factory and engineering jobs.

4. Space Relations (SR)
   Ability to visualize, to imagine the shape and surfaces of a finished object before it is built, just by looking at the drawings that would be used to guide workmen in building it. This ability makes some kinds of mathematics easier--solid geometry for example.

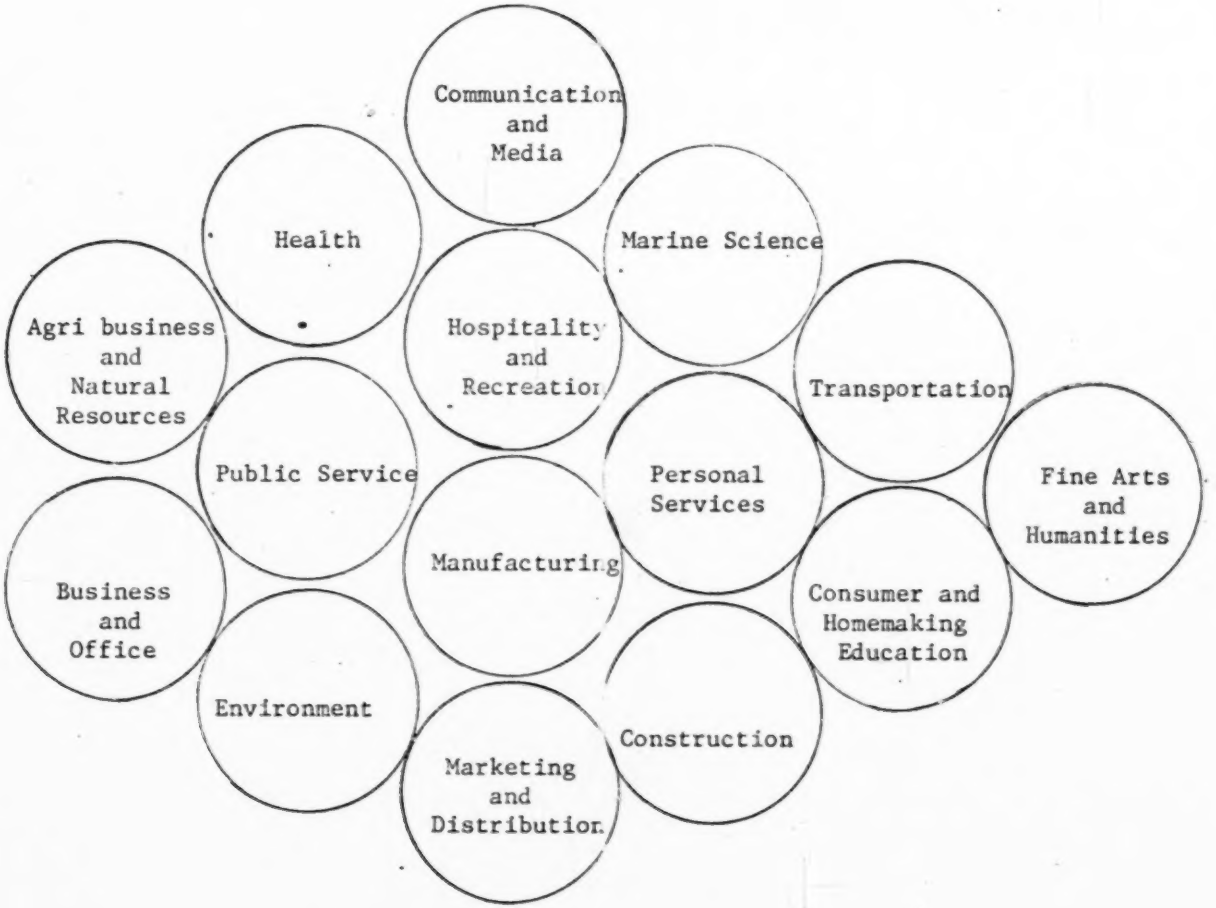
5. Verbal Reasoning (VR)
Ability to reason with words, to understand and use concepts expressed in words. Important in academic courses; also in jobs requiring much written or oral communication and jobs involving high levels of authority and responsibility.

6. Numerical Ability (NA)
Ability to reason with numbers, to deal intelligently with quantitative materials and ideas. Generally important in school work--but especially for such fields as mathematics, chemistry, physics, and engineering. Useful in such jobs as bookkeeper, engineer, laboratory technician, statistician, shipping clerk, carpenter, navigator, etc.

7. Verbal plus Numerical (VR+NA)
General scholastic aptitude--ability to learn from books and lectures, to master school subjects. Indicative also of potential for jobs of more than ordinary responsibility. This score is the equivalent in meaning of "mental ability" scores on most traditional group tests of "intelligence."



Key to Occupational Clusters U.S. Office of Education


Communication and Media
Health
Marine Science
Agri business and Natural Resources
Hospitality and Recreation
Transportation
Public Service
Personal Services
Fine Arts and Humanities
Business and Office
Manufacturing
Consumer and Homemaking Education
Environment
Construction
Marketing and Distribution

ANNUAL TWELFTH GRADE SURVEY

The School and Community Section of the North Central Association's Evaluative Criteria has on more than a few occasions requested the kinds of data that are prepared for the Annual Twelfth Grade Survey. The Research Department would like to standardize the base-line data for such requests so that they may be used for other agencies who are requesting similar data from our Department. This Department will make its first survey this year. A citywide report of the compiled data will be made available.

A summary report of the profiles of prospective applicants for college admission will also be made a part of this Department's first annual report of graduating seniors.

THE SPECIAL READING TESTING PROGRAM

I The following reading tests have been recommended for diagnostic purposes in all Special English Classes every year since September, 1968:

Grades 7-9 . . . . . Gates-MacGinitie, Survey D

Grades 10-12 . . . . Nelson Reading Test, Revised Edition

Each test has been administered in the fall (pretest) and in the spring (posttest) with the forms as indicated below:

Special English 7 . . . .Gates-MacGinitie, SURVEY D-Form 1M-Pretest
Form 2M-Posttest

Special English 8 . . . .Gates-MacGinitie, SURVEY D-Form 1M-Pretest
Form 2M-Posttest

Special English I . . . .Gates-MacGinitie, SURVEY D-Form 3M

Special English II. . . .Nelson Reading Test, Revised Edition-Form A

Special English III . . .Nelson Reading Test, Revised Edition-Form B

Special English IV . . .Nelson Reading Test, Revised Edition-Form C

In each school the English department chairman will determine the schedule for testing and supply teachers with the materials. The chairman

will order the booklets and answer sheets in April or May for September testing. A manual is supplied in each test package. It is to be returned to the English department chairman after test administration.

Send answer sheets after testing to the English Supervisor, Mr. B.T. Shirk. Machine-scoring will be handled by the Research Department.

II The following reading tests have also been recommended for use in the secondary reading classes:

Grade 7: For less able groups: CALIFORNIA ACHIEVEMENT TESTS - READING (1970 ed.) Level 3, Forms A and/or B.

For able groups: COMPREHENSIVE TESTS OF BASIC SKILLS - READING TEST (1968 ed.) Level 3, Forms Q and/or R.

Grade 8: CALIFORNIA ACHIEVEMENT TEST - READING (1957 ed.) CAT-JH (Junior High), Forms W, X.

Grade 9: METROPOLITAN ADVANCED READING TEST (1970 ed.) Forms F and/or G.

Grade 10: For less able groups: GATES-MACGINITIE READING TEST Survey E.

For able groups: GATES-MACGINITIE READING TEST Survey F.

Grades 11 and 12: THE NELSON DENNY READING TEST, Revised Edition, Forms A and/or B.

III Specimen sets of the above tests are available for examination in the Research Department.

THE INDIANA NEEDS ASSESSMENT PROGRAM

This office has been advised that the results of the State's Title III Assessment of Educational Progress will be made available to the School City of Gary before the end of the calendar year. This data will be filed with the Superintendents' and District Administrators' offices. Further information will be available after these administrators have studied the reports.

PART FIVE - CONTENT ANALYSES OF THE ITBS

(Vocabulary, Reading Comprehension and Mathematics Subtests Only)

TEST V: VOCABULARY

Skill in vocabulary differs from the other skills tested in the battery in that it is not so directly related to specific instruction as are most of the other skills. Test items consist of a word in context followed by four possible definitions. Nouns verbs, and adjectives are given approximately equal representation with a few adverbs at each level.

It is not the purpose of a single item in a test of this type to determine whether the pupil knows the meaning of a single word (the stimulus word) only. Nor is it necessary that the response words be easier than the stimulus word. Rather, the immediate purpose of each item is to determine if the pupil knows the meanings of all the words used in the item. Thus, a 40-item vocabulary test may sample as many as two hundred words from his general vocabulary, instead of only 40.

TEST R: READING COMPREHENSION

	GRADES INVOLVED
A. Details	
1. To recognize and understand important facts and details	3-8
2. To recognize and understand implied facts and relationships	3-8
3. To deduce the meaning of words or phrases from context	3-8
B. Purpose	
1. To detect the main purpose of a paragraph or selection	3-8
2. To recognize the main idea or topic of a paragraph or selection	3-8
C. Organization	
1. To recognize common elements or paralled topics in incidents or paragraphs	3-8
2. To recognize proper time sequence	3-8
D. Evaluation	
1. To develop generalizations from a selection	3-8
2. To recognize the writer's viewpoint, attitude, or intention	3-8
3. To recognize the mood or tone of a selection	5-8
4. To recognize outstanding qualities of style or structure	3-8

TEST V VOCABULARY

This is the only one of the eleven subtests for which no detailed classification of the skills tested is provided. In the construction of the vocabulary test, the major guides in the selection of words were frequency of usage, as determined from standard sources, balanced inclusion of the parts of speech, and representation of various subject matter. The following general skills are tested:

1. the use of tools involved in word recognition (phonics, context clues, etc.),
2. knowledge of the meanings of words, and
3. sensitivity to fine differences in meaning, and judgment in choosing the most appropriate word in a given context.

Suggestions for Improving Vocabulary

Other things being equal, the child with the largest vocabulary reads the best. A good vocabulary stems from (a) wide reading; (b) association with articulate people; (c) varied experiences--such as acquaintance with industrial or agricultural sites or processes, visits to fairs and museums, and so on; (d) travel; and, of course, (e) specific vocabulary instruction and drill. In all of these activities, conscious attention must be given to new words as they are encountered and their meanings ascertained.

The importance of understanding the meanings of words cannot be overemphasized, but there are no known short cuts to such understanding. The following suggestions have been found to be helpful:

1. Teach children to ask about any new, confusing, or unusual words as they encounter them.
2. Put such words on the board, and encourage their frequent use.
3. Enrich the curriculum generally, so that children have much material to talk and think about. Encourage the reading of books and magazines.
4. Have frequent oral tests covering new words, using them in sentences, and discussing their meanings.
5. When a unit of subject matter is finished, ask children to make lists of words or phrases which they have encountered in the study of that unit.
6. Teach words in context, not in isolation.
7. Keep the emphasis upon meaning rather than upon mere recognition or mechanical pronunciation of words.
8. Make definite provision for word study in the upper grades, that is, study of roots, prefixes, and suffixes.
9. Make specific attempts to break the habit of passing over unknown words in reading without looking them up.
10. Drill pupils in giving synonyms and antonyms, both for words and for phrases.
11. Give considerable practice in deriving meanings from the context.

TEST R READING COMPREHENSION

Skills Classification

The skills tested in Test R may be classed under four headings: details, purpose, organization, and evaluation. Because of the close correlation in test performance on items of these four types, it is not considered worthwhile to derive a separate score for each type. However, for the purposes of instruction it is useful to consider each of these skills separately. For each of these four classes, then, the items concerned primarily with the skills involved in that class will be identified. (Many of these items could be readily classified in more than one way; hence, the classification is somewhat subjective.)

D (Details)—To Recognize and Understand Stated or Implied Factual Details and Relationships

- D-1 To recognize and understand important facts and details
- D-2 To recognize and understand implied facts and relationships
- D-3 To deduce the meaning of words or phrases from context

P (Purpose)—To Develop Skill in Discerning the Purpose or Main Idea of a Paragraph or Selection

- P-1 To detect the main purpose of a paragraph or selection
- P-2 To recognize the main idea or topic of a paragraph or selection

O (Organization)—To Develop Ability to Organize Ideas

- O-1 To recognize common elements or parallel topics in incidents or paragraphs
- O-2 To recognize proper time sequence

E (Evaluation)—To Develop Skill in Evaluating What Is Read

- E-1 To develop generalizations from a selection
- E-2 To recognize the writer's viewpoint, attitude, or intention
- E-3 To recognize the mood or tone of a selection
- E-3 To recognize outstanding qualities of style or structure

Suggestions for Developing Ability to Recognize and Understand Stated or Implied Factual Details and Relationships (Code Letter D)

From the first grade on, reading for thought should be emphasized. Children do not suddenly learn to read with comprehension in the sixth grade; thoughtful reading at that level is the result of a long period of growth beginning in the first grade. No amount of drill at the higher levels can make up for a lack of attention to reading as a thought-getting process in the middle or lower grades. Many of the following suggestions, therefore, should be of value to teachers at the lower as well as the higher grade levels.

1. When asking questions, avoid the terminology of the context. Ask questions which cannot be answered with *yes* or *no;* ask questions which require some thought. Have pupils explain *how* and *why* instead of asking them *who, when, what, where,* or *how many.*
2. Use both objective and subjective techniques in asking direct factual questions about *significant* details.
3. Ask pupils to find details which support a given topic sentence or main idea.
4. Ask pupils to identify irrelevant details, those which do not contribute to the main points of the selection.
5. Frequently give directions for lessons in written form so that children will learn to follow printed directions.
6. In considering new words, emphasize meanings and use in context rather than the phonics of the words.
7. In no case, from the first grade on, permit verbalism, the mere reading of words. Insist that children know what they are reading about.
8. Employ questions which require the pupils to draw conclusions and make inferences in order to arrive at answers which are not definitely stated in the context. (The tests provide many illustrations of this type of question.)

Suggestions for Developing Skill in Discerning the Purpose or Main Idea of a Paragraph or Selection (Code Letter P)

1. Use objective exercises in which the pupils identify the topic sentence of a single paragraph. If necessary, begin with paragraphs in which the topic sentence is reasonably apparent.
2. Have children provide orally or in writing their own statements of the topic sentence of single paragraphs.
3. Provide multiple-choice exercises in which pupils identify the main idea or ideas of paragraphs, or longer selections, in which there are no clear-cut statements of the central idea.
4. Have pupils state in their own words the main idea or ideas of paragraphs or longer selections which do not contain a definite topic sentence. As pupils develop skill in discerning the main idea, they should be given exercises in which the central ideas are less obvious.
5. After the class has read a selection of one or more paragraphs, have each pupil write a question which may be correctly answered by a statement of the main idea.
6. Ask questions such as, "What was the author's purpose in writing this article?" or "What is the one most important thing to remember from the selection?"

Suggestions for Developing Ability to Organize Ideas (Code Letter O)

1. Provide additional exercises in recognizing main ideas and significant details, especially if pupils do not have good command of these skills. (See page 32.)

2. Provide exercises which require the pupils to arrange, in order, a sequence of events, as in history, or a sequence of processes, as in a science experiment.

3. Include definite instruction in outlining. Begin with simple paragraphs, identifying the main idea, and indicating how many subpoints are to be listed by the pupils. Next, use single paragraphs with the main ideas identified, but without any indication of the number of supporting ideas the pupils are to list. Graduate from this to single paragraphs which must be organized by the pupil with neither the main idea nor the supporting details provided by a teacher-made skeleton outline.

4. Have pupils outline increasingly longer and more complex passages. Provide them with some guidance through skeleton outlines at first, and then allow them to outline equally complex material without the aid of a skeleton.

5. Finally, in connection with content subjects, provide opportunities for pupils to organize reading material from more than one source. At first, pupils will need to take notes in which they organize the information from each source separately. Later they should be shown how to combine information from all sources into a single outline.

Suggestions for Developing Skill in Evaluating What Is Read (Code Letter E)

1. Set up exercises which provide pupils with opportunities for differentiating between facts and opinions.

2. Utilize exercises which call for differentiating between emotive and informative selections.

3. Capitalize on situations which provide opportunities for pupils to give their oral or written personal judgments of stories, articles, or shorter reading selections. Do not be concerned about their failure to express absolutely correct interpretations but inductively lead the pupils to better judgments when their own opinions are not defensible.

4. At the upper grade levels, occasionally ask of some inaccurate or slanted reading matter, "Why are we inclined to believe this?" or "What is it about us that tempts us to accept this?"

5. When the opportunity exists, consider orally the mood or tone of an article or the feeling that it induces in the reader.

6. When unusual writing style or organization is employed by the writer, discuss it with the class. Ask why the author wrote as he did and how it affects the reader.

TEST M-1: MATHEMATICS CONCEPTS	GRADES INVOLVED
A. Currency	
1. Reading and writing amounts	3
2. Relative values of coins	3-4
B. Decimals	
1. Reading and writing	6-7
2. Relative values	6-8
3. Rounding	6-7
4. Fraction decimal, percent equivalents	7-8
5. Fundamental operations: ways to perform	6-8
6. Fundamental operations: estimating results	6-8
C. Equations inequalities, and number sentences	3-8
D. Fractions	
1. Part of a whole and partitioning of a set	3-5
2. Relative values	4-8
3. Equivalence	4-8
4. Terms	5-8
5. Fundamental operations: ways to perform	4-8
6. Fundamental operations: estimating results	5-6
E. Geometry	
1. Points lines, and planes	4-8
2. Recognizing kinds and parts of geometric figures	3-8
3. Angles and triangles	5-8
4. Dimensions perimeters, and areas of polygons	4-8
5. Parts and areas of circles	5-8
6. Surface area and volume of solids	7-8
F. Measurement	
1. Quantity	3
2. Time	3-5
3. Temperature	5-6
4. Weight	3-5
5. Length	3-7
6. Area and volumn	4-8
7. Liquid and dry capacity	3-8
8. Precision of measurement	8

G. Numeration and Number System

1.	Counting	3
2.	Ordinals	3
3.	Place value and expanded notation	3-8
4.	Numeration systems other than base ten	4-8
5.	Properties of number systems	3-8
6.	Special subsets of the real numbers	7-8

H. Per cent: meaning and use 7-8

I. Ratio and proportion 4-8

J. Sets 3-8

K. Whole numbers

1.	Reading and writing	3-8
2.	Relative values	3-4
3.	Rounding	5-8
4.	Partition and measurement: average	6-8
5.	Fundamental operations: terms	3-8
6.	Fundamental operations: number facts	3-6
7.	Fundamental operations: ways to perform	3-4
8.	Fundamental operations: estimating results	3-6

TEST M-2: MATHEMATICS PROBLEM SOLVING		GRADES INVOLVED
A.	Currency (Money)	3-8
B.	Decimals	6-8
C.	Fractions	3-8
D.	Geometry	6-8
E.	Measurement	4-8
F.	Per Cents	6-8
G.	Ratio and proportion	5-8
H.	Whole Numbers	3-8

(NOTE: In many items two or more of the above concepts may be represented. In general, items are placed in the category representing either the most crucial or the most advanced concept required in the solution of the problem.)

TEST M-1 MATHEMATICS CONCEPTS

Skills Classification

C—Currency
- C-1 Reading and writing amounts
- C-2 Relative values of coins

D—Decimals
- D-1 Reading and writing
- D-2 Relative values
- D-3 Rounding
- D-4 Fraction, decimal, per cent equivalents
- D-5 Fundamental operations: ways to perform
- D-6 Fundamental operations: estimating results

E—Equations, Inequalities, and Number Sentences

F—Fractions
- F-1 Part of a whole and partitioning of a set
- F-2 Relative values
- F-3 Equivalence
- F-4 Terms
- F-5 Fundamental operations: ways to perform
- F-6 Fundamental operations: estimating results

G—Geometry
- G-1 Points, lines, and planes
- G-2 Recognizing kinds and parts of geometric figures
- G-3 Angles and triangles
- G-4 Dimensions, perimeters, and areas of polygons
- G-5 Parts and areas of circles
- G-6 Surface area and volume of solids

M—Measurement
- M-1 Quantity
- M-2 Time
- M-3 Temperature
- M-4 Weight
- M-5 Length
- M-6 Area and volume
- M-7 Liquid and dry capacity
- M-8 Precision of measurement

N—Numeration and Number Systems
- N-1 Counting
- N-2 Ordinals
- N-3 Place value and expanded notation
- N-4 Numeration systems other than base ten
- N-5 Properties of numeration and number systems
- N-6 Special subsets of the real numbers

P—Per Cents: Meaning and Use

R—Ratio and Proportion

S—Sets

W—Whole Numbers
- W-1 Reading and writing
- W-2 Relative values
- W-3 Rounding
- W-4 Partition and measurement: average
- W-5 Fundamental operations: terms
- W-6 Fundamental operations: number facts
- W-7 Fundamental operations: ways to perform
- W-8 Fundamental operations: estimating results

The changes in content, grade placement, and relative emphasis upon various mathematics concepts in the current forms of Test M-1 reflect developments that have occurred in the mathematics curriculum during the last decade. The skills classification has also been revised accordingly.

In the building of Forms 5 and 6 of Test M-1, the first step was an extensive investigation of current textbooks, with particular reference to grade placement of, and relative emphasis upon, mathematics concepts. All the leading textbook series of recent copyright were examined. Each book in each series was studied page by page, and the time and manner of introducing each new skill was noted.

Subsequently, a questionnaire was sent to all school systems participating in the Iowa Basic Skills Testing Program, asking each to identify the textbook series it was then using in each grade, the year the series was published, and the year it was adopted locally. At the same time, an informal survey of national use was made by each of the regional offices of Houghton Mifflin Company. This information was then tabulated, and the per cent of use nationally for each Grades K-8 series was estimated. Since there is still considerable diversity in the content of the major textbook series, it was necessary to know the extent of use of each series to insure that the test content would be representative of the mathematics curriculums in the majority of elementary schools.

Inevitably, even in a test intended for a single grade level, certain compromises in grade placement of test content are necessary. If a test contains a great many items on concepts taught in the latter half of the school year, its appropriateness for use early in the year is questionable. On the other hand, if concepts taught in the second semester of a grade are not covered, their omission detracts from the validity of the test when administered near the end of the year. In general, at the beginning of the school year, a pupil in a given grade should be familiar with the mathematics concepts included in about 80–85 per cent of the items for that grade in Test M-1. By midyear, he should be familiar with 90–95 per cent of the items for his grade. The remaining items require competence usually attained during the second half of the year.

Suggestions for Developing Mathematics Concepts

At the present time there is still some diversity in method among widely used programs. However, the *objectives* of the majority of these programs are highly similar.

As in other content areas, the particular method employed is probably less important than the skill of the teacher in using the method. It may take time for teachers to become as proficient in the use of the new methods as they were with more traditional methods, to learn what works and what does not, how to distribute emphasis, how to provide for individual differences, etc.

The mathematics teacher should realize that pupils need more time to master a fact or process when meaning and understanding are stressed than when mere "telling" is followed by drills. In the long run, children taught by methods which develop meaning and understanding will achieve superior competence, even though they may seem to be temporarily retarded in the early stages of instruction by insistence upon understanding.

The suggestions below are believed to represent the general philosophy of method endorsed by proponents of most of the major instructional programs.

1. Strive always to develop understanding of concepts, processes, and relationships. Introduce concepts through problem situations in which pupils are encouraged to discover solutions for themselves rather than to depend on explanations and demonstrations.

2. Encourage pupils to experiment and to explore the possibilities of alternate solutions. Try to develop and reward resourcefulness in verification and proof.

3. Create a climate in which the importance of mathematics is recognized, not only in the solution of immediate problems, but also as a base for the advanced study of all mathematics, science, and other fields as well.

TEST M-2 MATHEMATICS PROBLEM SOLVING

Skills Classification

The major skills categories for Test M-2 are similar to those for Test M-1 and are coded the same:

C—Currency (Money)

D—Decimals

F—Fractions

G—Geometry

M—Measurements

P—Per Cents

R—Ratio and Proportion

W—Whole Numbers

Each item has been placed in only one skills category, despite the fact that in many items two or more of these concepts may be represented. In such instances, the assignment was somewhat arbitrary, but, in general, items were placed in the category representing either the crucial or the most advanced concept required in the solution of the problem.

The small letters following the capital letter indicate the process or sequence of processes involved in the solution of the problem, as follows:

a—addition

s—subtraction

m—multiplication

d—division

Changes in mathematics content and grade placement have affected the problem solving test far less than the concepts test.

In Test M-2, competence in problem solving is tested in a functional setting of challenging and practical problem situations. A conscientious effort has been made to include as many different number combinations as possible, and to represent most frequently the specific number skills that have shown the highest incidence of error (higher decade facts, zero facts, etc.). While there is no separate computation test in the *Iowa Tests* battery, computation has not been disregarded. Rather, computation skills are systematically tested in a functional setting. The fundamental operations and concepts involved in the problems for a particular level of the test are those generally presented during the first half of the grade for which that level is primarily intended. This grade placement was determined from the most recently published textbook series in widespread use.

A minor change in Forms 5 and 6 of Test M-2 is the smaller proportion of problems involving currency. Conversely, there are more questions relating to problem solving in the physical and social science areas.

The problem situations devised for Test M-2 are original and contemporary. An ideal problem in mathematics is one that is novel for the individual asked to solve it. Many of the "problems" encountered in current textbooks, however, might be more appropriately described as "exercises." Often they are identical, or very similar, to others that have been explained in the textbook or by the teacher. In such examples, the pupil is not called upon to work out anything new; rather, modeling, imitation, and recall are the main behaviors involved in the solution. This observation is not meant to imply that repetitious activities such as working exercises and drilling of basic facts are not useful; indeed, they are highly important and quite necessary. What is meant is that many opportunities should also be provided for pupils to solve realistic problems presented in fresh situations such as they might experience in everyday living.

Suggestions for Developing Problem Solving Skills

In addition to continually providing problems for pupils to solve, the teacher may find it helpful to keep the following suggestions in mind when working on the development of problem solving skills.

1. Provide adequate opportunities for practice after understanding has been acquired. Drill has not been outmoded, but it should take place under conditions that lead to effective learning (awareness of need, motivation, knowledge of results, etc.).

2. Make frequent use of "oral" or "mental" arithmetic to foster habits of attention, to give pupils practice in discriminating quickly between pertinent and extraneous material, and to afford practice in the rapid and efficient manipulation of quantitative concepts.

3. Place considerable emphasis upon estimation and upon judging whether a particular solution makes sense.

4. Encourage the student to ask questions of himself: What do I know? What facts are given? What do I want to find out? What further information is needed? Often problems occur with irrelevant information, and it is necessary to select the pertinent facts or conditions.

5. Have the pupils write mathematical sentences which can be used in solving specific problems. That is, translate verbal phrases and sentences into mathematical language.

was then tabulated, and the per cent of use nationally for each Grades K-8 series was estimated. Since there is still considerable diversity in the content of the major textbook series, it was necessary to know the extent of use of each series to insure that the test content would be representative of the mathematics curriculums in the majority of elementary schools.

Inevitably, even in a test intended for a single grade level, certain compromises in grade placement of test content are necessary. If a test contains a great many items on concepts taught in the latter half of the school year, its appropriateness for use early in the year is questionable. On the other hand, if concepts taught in the second semester of a grade are not covered, their omission detracts from the validity of the test when administered near the end of the year. In general, at the beginning of the school year, a pupil in a given grade should be familiar with the mathematics concepts included in about 80-85 per cent of the items for that grade in Test M-4. By midyear, he should be familiar with 90-95 per cent of the items for his grade. The remaining items require competence usually attained during the second half of the year.

Suggestions for Developing Mathematics Concepts

At the present time there is still some diversity in method among widely used programs. However, the *objectives* of the majority of these programs are highly similar.

As in other content areas, the particular method employed is probably less important than the skill of the teacher in using the method. It may take time for teachers to become as proficient in the use of the new methods as they were with more traditional methods, to learn what works and what does not, how to distribute emphasis, how to provide for individual differences, etc.

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The suggestions below are believed to represent the general philosophy of method endorsed by proponents of most of the major instructional programs.

1. Strive always to develop understanding of concepts, processes, and relationships. Introduce concepts through problem situations in which pupils are encouraged to discover solutions for themselves rather than to depend on explanations and demonstrations.

2. Encourage pupils to experiment and to explore the possibilities of alternate solutions. Try to develop and reward resourcefulness in verification and proof.

3. Create a climate in which the importance of mathematics is recognized, not only in the solution of immediate problems, but also as a base for the advanced study of all mathematics, science, and other fields as well.

APPENDIXES OF RELATED DATA

		Page
Appendix A:	Practice Exercises	45
Appendix B:	Announcements for Students	51
Appendix C:	Incomplete Data Form	54
Appendix D:	Test Inventory Form.	55
Appendix E:	A List of Factors Affecting the Success of a Measurement and Evaluation Program	56
Appendix F:	Grid for Plotting Pairs of Stanines on a Scattergram for a Single Class	57

School City of Gary
Gary, Indiana

DIVISION OF RESEARCH AND DEVELOPMENTAL SERVICES

P R A C T I C E E X E R C I S E S

(For middle and high schools' citywide testing program)

Enclosed are Practice Exercises which should be given to students in preparation for the Iowa Tests of Basic Skills. These Practice Exercises will take about 15 minutes to administer and review. Since the answer sheets from the regular testing program will be scored by machine, it is imperative that proper care be given to these Practice Exercises. Use the sample answer sheet provided and teach the children how to fill in between the parallel lines with a regular lead pencil. Please stress the necessity for marking answers correctly and avoiding stray marks. Check each pupil's paper to make sure directions are followed correctly.

Try to have the practice testing situation as similar to the real process as possible. There should be no interruptions during testing time. The significance of future test results is built upon proper utilization of these Practice Exercises.

THE PRACTICE EXERCISE BOOKLETS ARE TO BE RETURNED TO THE DIVISION OF RESEARCH IN THE SAME ENVELOPE IN WHICH THEY WERE SENT.

TEACHER'S INSTRUCTIONS FOR USING THE PRACTICE EXERCISES

Prepare a chalkboard model of the part of the answer form in which the data are to be written. Complete those parts that apply generally to your group. (Name, School No., Grade, Sex, Student Number--use 123456, Teacher, Date of Birth, and Test Date) - This information will be pre-printed for each of your pupils on each answer sheet in the regular testing program and the student number will also be recorded below in the appropriate spaces in the box for student identification.

Check to see that all pupils have pencils (use No. 2 regular lead pencils); then distribute the Practice Exercises.

Read aloud the Instructions to Pupils on Page 1 while the pupils read them silently. Then read each of the six items, indicating the correct answer and showing pupils how the answer form appears when correctly marked as illustrated at the right of each question.

Answer any questions relating to the items on Page 1.

Pass out the answer sheets. Give blank answer sheets to any pupils without pre-printed answer sheets.

From this point on, certain parts of these instructions are printed in capital letters and preceded by "Say " These parts are to be read to the pupils.

Say: LOOK AT THE PART OF YOUR ANSWER SHEET THAT HAS NAME, SCHOOL, DATE, ETC. PRINTED ON IT. IF YOUR NAME IS NOT ALREADY PRINTED THERE, CAREFULLY FILL IN YOUR OWN NAME, GRADE, SEX, TEACHER, DATE OF BIRTH, AND TODAY'S DATE. DO NOT WORRY ABOUT YOUR STUDENT NUMBER. IT WILL BE RECORDEDED FOR YOU LATER. (Refer to chalkboard model if it is available.)

(Give pupils time to record these data. Check to see that information is properly entered.)

When pupils are ready,

Say: THE GENERAL DIRECTIONS FOR RECORDING YOUR ANSWERS ON THE ANSWER FORM ARE: MAKE A HEAVY MARK NEXT TO THE NUMBER OR LETTER OF THE ANSWER YOU HAVE DECIDED IS CORRECT. MAKE EACH MARK FILL THE ANSWER SPACE BY MOVING THE PENCIL BACK AND FORTH FIRMLY. MAKE YOUR MARKS HEAVY AND BLACK. DO NOT MAKE ANY MARKS EXCEPT IN THE ANSWER SPACE. IF YOU MAKE A MISTAKE OR WISH TO CHANGE AN ANSWER, BE SURE TO ERASE THE OLD ANSWER COMPLETELY. ARE THERE ANY QUESTIONS?

Answer any questions. Then

Say: NOW FIND S-1 ON YOUR ANSWER SHEET. THIS IS WHERE YOU WILL BEGIN TO MARK YOUR ANSWERS TO THE QUESTIONS WHICH BEGIN ON PAGE 2 OF THE PRACTICE EXERCISES.

Say: NOW THAT YOU HAVE SEEN HOW AND WHERE TO MARK, WE ARE GOING TO MARK SOME EASY PRACTICE QUESTIONS. PLEASE TURN TO PAGE 2 OF YOUR PRACTICE EXERCISES. THE QUESTIONS ARE ON PAGE 2, BUT YOU WILL MARK YOUR ANSWERS ON THE SEPARATE ANSWER SHEETS. YOU ARE NOT TO PUT ANY MARKS ON THE PRACTICE EXERCISE BOOKLET.

Say: READ THE DIRECTIONS FOR THE SAMPLE TEST SILENTLY WHILE I READ THEM ALOUD. THEY ARE: 'READ THE NEXT INSTRUCTIONS CAREFULLY AND THEN DO EXACTLY AS THEY SAY. GO RIGHT ON FROM ONE PART TO THE NEXT UNTIL YOU FINISH ALL THE QUESTIONS. USE YOUR SPECIAL ANSWER SHEET.'

Say: YOU MAY BEGIN.

Walk around the room and check to be sure the children understand your directions. After sufficient time,

Say: STOP. THIS COMPLETES THE PRACTICE TEST. NOW LOOK AT THE ANSWER MARKS YOU HAVE MADE. ARE ALL OF YOUR MARKS HEAVY, BLACK LINES? IF NOT, GO OVER THE LIGHT ONES AND BLACKEN THEM WELL. IF YOU CHANGED ANY ANSWERS, DID YOU ERASE THE WRONG ONES COMPLETELY? MAKE YOUR WORK CLEAN AND NEAT.

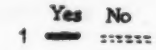
When pupils have completed this inspection, have them hand in the Practice Exercises. Then collect the Sample Answer Sheet. Inspect the Sample Answer Sheet. If any pupils have not marked properly, additional help should be given to such pupils. Score the answer sheets, or return them to pupils to score.

PRACTICE EXERCISES: FOR MARKING ANSWERS TO TESTS ON SPECIAL ANSWER SHEETS

1. Can a fish swim?
(A fish can swim, so the Yes is marked.)

YES NO

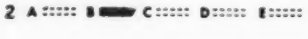
ON ANSWER SHEETS



2. What letter is in front of the number 12 at the right?

(The answer is B, so B is marked.)

A 10
B 12
C 14
D 16
E 18



3. What number at the right is the largest?

(111 is the largest, so the F is marked.)

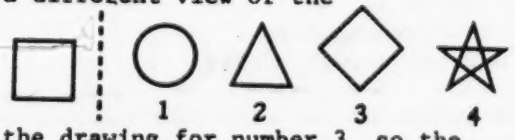
F 111
G 30
H 29
J 17
K 8

4. Which of these words has a mistake in spelling?

(There are no mistakes, so the 5 is marked.)

1 cow
2 dog
3 cat
4 pig
5 (no mistake)

5. Which drawing to the right of the dotted line is a different view of the first drawing?



(The answer is the drawing for number 3, so the 3 is marked.)

6. In the sentence below which line has a word that should be capitalized?

1 we are going
2 to see a movie
3 later today.
4 (no mistake)

(The answer is 1, the first letter, so the 1 is marked.)

SAMPLE SHEET

Read the next instructions carefully and then do exactly as they say. Go right on from one part to the next until you finish all the questions. Use your special answer sheet.

TEST S-1

Read the following items and mark the number or letter of each correct answer on your special answer sheet.

1. In making answers, I should make

   1) a light line.
   2) dots.
   3) a heavy, black line.
   4) a cross mark like X.

2. In taking this test, I was told to mark on

   1) the test booklet.
   2) the answer sheet.
   3) the answer card.
   4) scratch paper.

3. Find the line in the sentence below which has the words "... will teach me..." and mark the number on your answer sheet.

   1) Taking this practice test
   2) will teach me
   3) how to mark answers
   4) on special answer sheets.

4. Mark the number of the word that means the same as the word in heavy black type.

   A **big** man

   1) small
   2) large
   3) medium
   4) low

5. Which number is missing is this row of numbers?

0 1 2 3 5 6 7

1) 1
2) 4
3) 90
4) None

6. If Mary bought four apples and then gave one to her brother, how many apples would Mary have left?

1) 2
2) 3
3) 4
4) 5

TEST S-2

7. One penny and two dimes make

A) 10¢
B) 11¢
C) 12¢
D) 21¢
E) 25¢

8. Subtract:

$$\begin{array}{r} 17 \\ -12 \\ \hline \end{array}$$

F) 0
G) 5
H) 9
J) 19
K) 29

9. Divide: $3\overline{)9}$

L) 3
M) 6
N) 9
P) 12
Q) 36

TEST S-3

Mark the number of any word in each exercise if it has a mistake in spelling.

10. 1) talk
    2) start
    3) skool
    4) first
    5) (No mistakes)

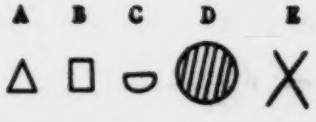
11. 1) skip
    2) like
    3) sing
    4) read
    5) (No mistakes)

12. 1) dance
    2) watter
    3) now
    4) candy
    5) (No mistakes)

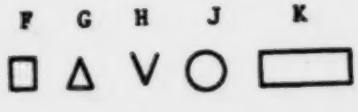
TEST S-4

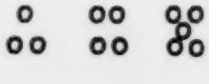
A series of drawings is given which are alike in a certain way. Find the drawing at the right that goes with the first three and mark the number on your answer sheet.

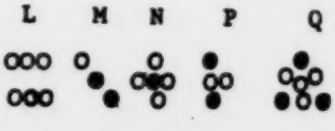
13.



14.



15. 



Form BS

RESEARCH DEPARTMENT: DIVISION OF INSTRUCTION
School City of Gary Indiana

YOU ARE GOING TO TAKE A TEST IN A FEW DAYS

WHAT ARE THE BASIC SKILLS?

We know that reading, writing and mathematics are important. They are the first things we study in school and we continue to use them all our lives. Certain other skills are just as important: vocabulary, correct English and spelling, and the use of maps, charts, the dictionary etc. Without these skills we would learn very little in school.

Think about it a moment. Most of what we know about the social studies we learned through reading. We need reading and mathematics to study science. The things we write would be hard for others to understand if we could not spell punctuate, and use words correctly. These are only a few examples.

These skills are needed throughout all the grades. They also affect later work in high school and college. In all kinds of work beyond school, and even in play, these skills are used daily by everyone. That is what we call them the "basic skills." The test which measures them are called the IOWA TESTS OF BASIC SKILLS.

WHY ARE THESE TESTS GIVEN?

To find your weight, you step on a scale. To check your height, you use a yardstick. To find out how well you are doing in school, you take a test. The scale the yardstick and the test are all ways of finding out something important about you. Of course, the skills taught in school cannot be measured as accurately as can height and weight.

A good test tells two things about you. First, it shows how much you know about whatever the test covers--reading, language, and so on. Second, it shows how you stand among other pupils in your grade.

The IOWA TESTS OF BASIC SKILLS give you your teachers, and your parents this information for the most important parts of your school work. They show how well you have mastered the basic skills generally. They also show how your skills compare with those of thousands of other pupils who have taken the tests.

For these reasons the test results are your teacher's best means of knowing whether or not you really need to improve your skills. Can you guess now how good your best scores will be? Will they be about average for your grade or above or below? Maybe you are better in some skills than you would guess. Perhaps you have thought some skills were not important and therefore haven't mastered them as well as you should. When you know what your weak areas are, you may be able to improve in those skills. Improving your skills should enable you to do better school work.

WHAT SKILLS ARE TESTED?

The basic skills tested in the IOWA TEST are:

Vocabulary : knowing the meaning of words
Reading : understand what you read
Mathematics : understanding the number system, mathematic terms and operations; problem solving.

Form VN

RESEARCH DEPARTMENT: DIVISION OF INSTRUCTION
School City of Gary, Indiana

YOU ARE GOING TO TAKE A TEST IN A FEW °DAYS

Verbal Reasoning

Ability to reason with words, to understand and use consepts expressed in words. Important in academic courses; also in jobs requiring much written or oral communication and jobs involving high levels of authority and responsibility.

Numerical Ability

Ability to reason with numbers, to deal intelligently with quantitative materials and ideas. Generally important in school work--but especially for such fields as mathematics, chemistry, physics, and engineering. Useful in such jobs as bookkeeper, engineer, laboratory technician, statistician, shipping clerk, carperter, navigator, etc.

VR+NA (Verbal plus Numerical Ability)

General scholastic aptitude ability to learn from books and lectures, to master school subjects. Indicative also of potential for jobs of more than ordinary responsibility. This score is the equivalent in meaning of "mental ability" scores on most traditional group tests of "intelligence."

Form AC

RESEARCH DEPARTMENT: DIVISION OF INSTRUCTION
School City of Gary, Indiana

YOU ARE GOING TO TAKE A TEST IN A FEW DAYS

Abstract Reasoning

A non-verbal, non-numerical measure of reasoning power. Ability to see relationships among things--objects, patterns, diagrams, or designs--rather than among words and numbers. Useful in shop, drafting, and laboratory work--also in mathematics, in electrical or mechanical trouble-shooting, in computer programming, etc.

Clerical Speed and Accuracy

Quickness and accuracy in perceiving and marking simple letter and number combinations. Important in paper work in school, and in offices, laboratories, stores, warehouses, or wherever records are made or filed or checked. Sometimes a low score on SSA for a generally able person may indicate great emphasis on correctness rather than genuine lack of ability to work rapidly.

Form MS

RESEARCH DEPARTMENT: DIVISION OF INSTRUCTION
School City of Gary, Indiana

Y O U A R E G O I N G T O T A K E A T E S T I N A F E W D A Y S

Mechanical Reasoning

Comprehension of mechanical principles and devices, and of the laws of everyday physics. Courses in the physical sciences, technical studies, or manual training shop are easier for those who score high in MR, as are mechanical repair work and a wide variety of factory.

Space Relations

Ability to visualize to "think in three dimensions" or picture mentally the shape, size and position of objects when shown only as picture or pattern. Drafting shop courses, some kinds of mathematics and some kinds of art or design courses are among those demanding this sense. It is needed by carpenters, architects, machinists engineers dentists, dress designers, and others whose work requires them to visualize solid forms or spaces.

RESEARCH DEPARTMENT: DIVISION OF INSTRUCTION
School City of Gary, Indiana

1973-74 T E S T I N V E N T O R Y F O R M
(Middle and High Schools)

INSTRUCTION: This inventory form is filled out in triplicate. Please fill in location of storage area for test materials, sign and return the original to Julius Stratton in the Research Department. The principal's office should file one copy and the counselor or testing chairman should file the other copy.

The following testing materials are in storage in our school:
School _____

Location _____

_____

TEST BOOKLETS

IOWA TEST OF BASIC SKILLS	Form 3	Form 5	Form 6
Complete Test Booklets			
Level 12 (Grade 6) - Form 5			
Level 14 (Grade 8) - Form 5			
Manuals for Administration - Form 5			
H.S. STANFORD ACHIEVEMENT TESTS	**Form A**	**Form B**	
Test of Academic Skills, Level I			
Test of Academic Skills, Level II			
Manuals for Administration			
LORGE-THORNDIKE TEST OF INTELLIGENCE	**Form 1**		
Manuals for Administration			
DIFFERENTIAL APTITUDE TESTS	**Form A**	**Form L**	**Form M**
D.A.T. Battery: Book I			
D.A.T. Battery: Book II			
Numerical Ability and Verbal Reasoning Test Booklets			
Manuals for Administration			

Principal's Signature _____

Counselor and/or _____

Testing Chairman _____

THERE'S A MISSING LINK...

RESEARCH DEPARTMENT: DIVISION OF INSTRUCTION
School City of Gary, Indiana

A LIST OF FACTORS AFFECTING THE SUCCESS OF A MEASUREMENT AND EVALUATION PROGRAM

1. Purposes of the Program

   Clearly defined
   Understood by parties involved

2. Choice of Tests

   Valid
   Reliable
   Appropriate difficulty level
   Adequate norms
   Easy to administer and score
   Economical
   Best available for purpose

3. Utilization of test results

   Definite plans for use of results
   Provision for giving teachers all necessary help in using scores
   Provision for systematic follow-up use of results

4. Affiliated Research

   Full advantage taken of results
   Provision for special studies, analyses, etc.

5. Administration and scoring

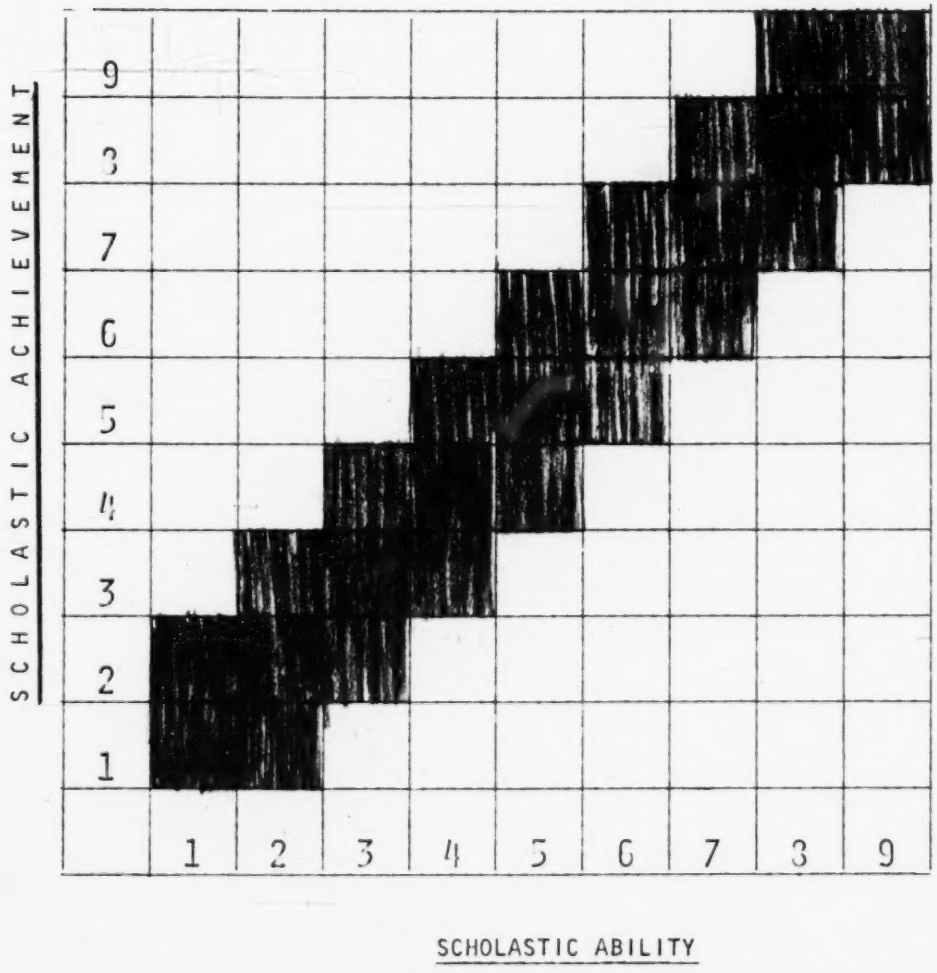
   Administrators well trained
   All necessary information provided
   Scoring services available

6. System of records

   Necessary for purpose
   Convenient form for use

An audio-visual report presented during the joint meeting of High School and Middle School Principals on Wednesday, May 2, 1973, at 9:30 a.m., in Conference Room A, of the School Service Center.

Julius Stratton, Supervisor
Research and Testing



Grid for Plotting Pairs of Stanines on a Scattergram for a Single Class

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